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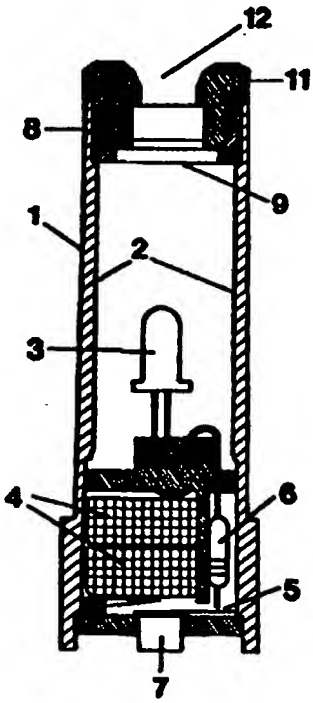
(54) Title: POCKET-SIZE DEVICE, WITH MICROSCOPIC MAGNIFYING AND INCORPORATED LIGHT SOURCE FOR THE VISUALIZATION, THROUGH THE SALIVA, OF THE FEMALE FERTILITY

(57) Abstract

The device is made by a pocket-size capsule (13), including the means for lighting (3, 4, 5, 6, 7) and the optical magnifying (10, 11, 12) of salivary samples set on the slide (9), incorporated in order to point out and recognize the possible fern structure (F), typical of the fertile period of the cycle.



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POCKET-SIZE DEVICE, WITH MICROSCOPIC MAGNIFYING AND INCORPORATED LIGHT SOURCE FOR THE VISUALIZATION, THROUGH THE SALIVA, OF THE FEMALE FERTILITY

The invention concerns a pocket-size device, for the microscopic magnifying, with internal light source, of salivary samples, in order to determine the female cycles of fertility.

It is well known that every woman, during the monthly cycle, some days are fertile. The egg matures towards the half of the cycle, generally 14 days prior the onset of mestruation. All in all the days useful to have a pregnancy are almost six.

Moreover in subjects with irregular cycle, the moment of the ovulation is difficult to determine.

During the cycle, in the female body, several changes take place: for example the basal temperature, which is low in the first half of the cycle, it rises in the second, while the salivary composition changes in relationship with the quantity of present hormones.

The current invention originates from the experimental researches carried out for several years on the female saliva in the various cycle phases, which evidenced a very strict correlation between the actual

ovulation and the resulting image on the microscope, consisting in several branches, resembling ferns, with thick leaves.

During the infertile days, this image shows instead only a few points in open order.

This structure starts to be visible 3-4 days before the egg matures and ceases 2-3 days after ovulation. The fertile period lasts less than one week.

In such period, if a woman does not want to conceive, she should take some precautions. On the other hand, if a pregnancy is desidered, a concentration of sexual activity in this period is suggested.

To a certain extend, it is also possible to determine the sex of the baby. It has been realized that more girls are conceived when the image of the fern is growing;on the contrary when the fern structure is full and well defined, more boys are conceived.

The aim of the invention is to allow an immediate check, everywhere and in each moment, of the fertility situation of the woman, through the application of the above mentioned scientific principle.

The object of the invention is gained with the device, made by a pocket-size capsule comprising the means for lighting and optical magnifying of salivary samples set on an incorporated typical of the fertile

period of the cycle.

The invention is useful in several and important situations like:

- preventing undesidered pregnancies without using contraceptives;
- conceiving a baby for couples who have problems, since it determines the exact moment of ovulation;
- controlling the private life.

In a possible variation of the invention, the pocket-size device includes a sensor with a optical fibres, or other electric mean, electronic or electromechanic, suitable to allow the variety of colourings detectable in the image of the salivary sample.

In a further variation, this function can be realized with mechanisms protruding from structure (1).

The invention is shown in deeper details in the following pages with the help of drawings which display the use.

Figure 1 shows a vertical section of the device.

Figure 2 shows the details of the single elements.

Figures 3-4-5 show, respectively, the image of the external capsule, its section and the container of the parts forming the device.

Figures 6-7-8 show a reproduction of the images visible with the invented device, typical respectively of the infertile, transitory and fertile periods.

The figures show a pocket-size device with microscopic magnifying and incorporated light source, to visualize, through the saliva, the female fertility, which includes:

- a cylindrical hollowed structure (1), internally coated by a film (2), preferably in anti-reflection PVC;
- a lighting mean, incorporated in the bottom of structure (1), made by a lighting Led (3), fueled by the incorporated batteries (4), through the contact shell (5) and the diode (6), operated by the shutter-release (7);
- a carrier (8), structured to seat on top of structure (1), carrying the slide (9) and on which the salivary sample is set, in order to be crossed by the lighting rays originated by the Led (3) and channeled by the cylindrical structure (1);
- a microscopic magnifying device (10), held by the nut (11), shaped to be placed at adjustable distance, for focusing, on top of carrier (8), in order to convey the image of the salivary sample to the ocular (12) and verify the presence of fern structures (F), typical of

the fertile period;

- a locking capsule (13), applicable with pressure and/or beat on structure (1), for anti-dust pocketable carry, to protect the optical parts.

The operating directions of the invention can be so outlined:

- the user removes the cover capsule (13) and pulls out the structure (1), carrying the optical parts;
- cleans the lens of the ocular (12) and the slide (9);
- applyes a small, not foamy, salivary sample on the slide and let it dry for a few minutes;
- insert the ocular (12) together with the nut (11) in the carrier (8);
- lean your eye on the ocular (12), press the shutter-release (7) and focus the image, by turning the ocular (12);
- compares the image visualized with the ones known to her or with the figures 6-7-8, thus having the immediate verification of her fertility in that moment.

CLAIMS

1) Pocket-size device, with microscopic magnifying and incorporated lighting source, to visualize, through the saliva, the female fertility, characterized by:

- a cylindrical hollowed structure (1), internally coated by a film (2), preferably in anti-reflection PVC;
- a lighting mean, incorporated in the bottom of structure (1), made by a lighting Led (3), fueled by the incorporated batteries (4), through the contact shell (5) and the diode (6), operated by the shutter-release (7);
- a carrier (8), structured to seat on top of structure (1), carrying the slide (9) and on which the salivary sample is set, in order to be crossed by the lighting rays originated by the Led (3) and channeled by the cylindrical structure (1);
- a microscopic magnifying device (10), held by the nut (11), shaped to be placed at adjustable distance, for focusing, on top of carrier (8), in order to convey the image of the salivary sample to the ocular (12) and verify the presence of fern structures (F), typical of the fertile period;

- a locking capsule (13), applicable with pressure and/or beat on structure (1), for anti-dust pocketable carry, to protect the optical parts.

2) Pocket-size device according to claim 1, characterized by the fact that the rotation of the ocular (12) in respect to the carrier (8), determines the focusing of the salivary sample applied on the slide (9).

3) Pocket-size device according to claim 1, characterized by the fact that the incorporated Led (3) is lighted by the shutter-release (7), in order to verify the presence of the fern structure (F) in the salivary sample set on the slide (9).

4) Pocket-size device according to claim 1, characterized by the presence of a sensor with optical fibres, or of a different kind, to determine the period of the cycle through the variety of colourings, detectable in the image of the salivary sample.

FIG.1

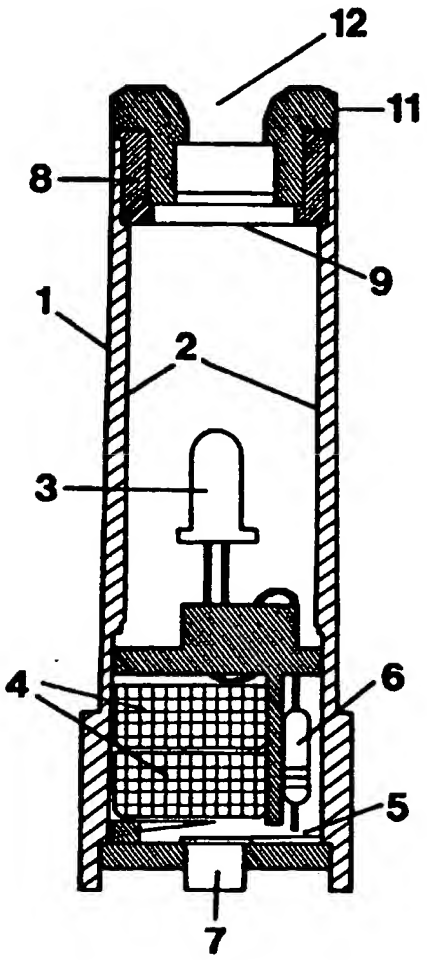


FIG.2

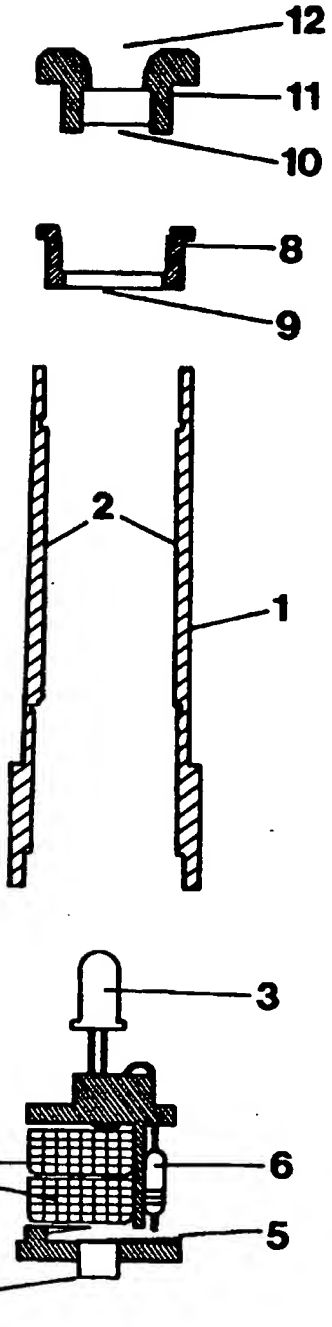


FIG.3

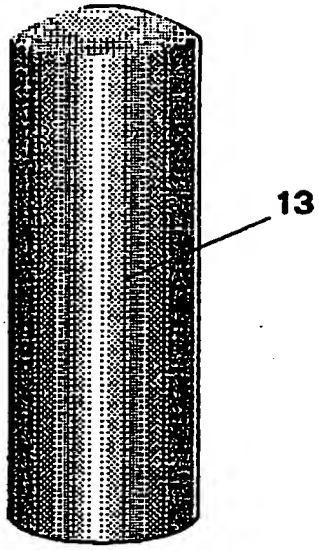


FIG.4

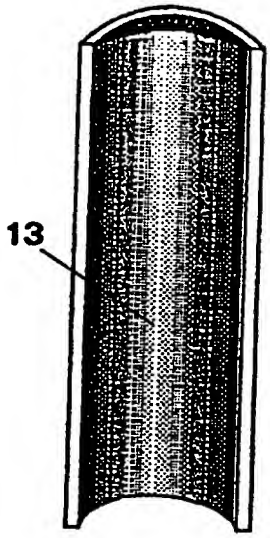


FIG.5

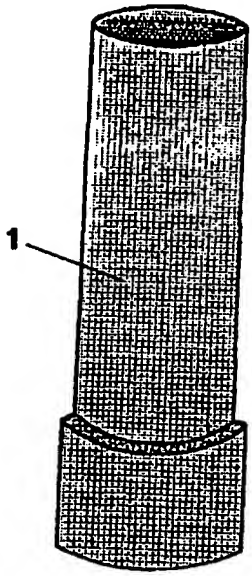
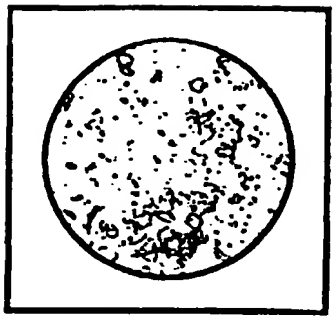


FIG.6



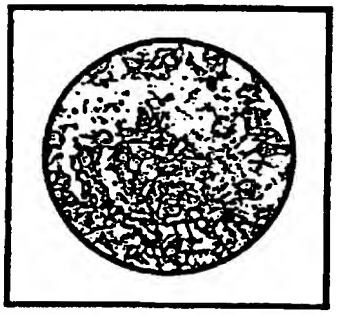
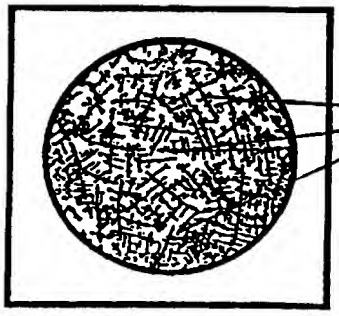


FIG.7

FIG.8



INTERNATIONAL SEARCH REPORT

Int ional Application No
PCT/IT 94/00043

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61B10/00 G02B27/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB,A,2 190 765 (ORTUETA CORONA) 25 November 1987 see page 2, line 109 - line 123	1-4
Y	DE,U,91 04 079 (WEIDEMANN) 1 August 1991 see page 11, paragraph 3; claim 1	1-4
A	WO,A,84 04237 (DUBRUCQ) 8 November 1984 see claim 1	4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
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Information on patent family members

Int. onal Application No
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GB-A-2190765	25-11-87	CA-A-	1300928	19-05-92
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